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The Great California Electricity Blackout that Wasn't

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California and its western neighbors closed out the latest historic regional climate emergency after defying repeated predictions of calamitous large-scale power outages. Analogies to “dodging a bullet” don’t do justice to the achievement; the region’s grid operators overcame more than a week of relentless record-breaking heat that stretched from Los Angeles to Denver. The biggest, if largely unsung, contributors were an increasingly well integrated regional transmission grid, decades of energy efficiency progress in the states it connects, and record-setting acquisitions of renewable energy and battery storage. Also notable were adroit emergency maneuvers, including the rapid deployment of California’s new Strategic Reliability Reserve, far-reaching state, public and private sector actions to reduce loads on the grid at critical times, and a very

timely appeal texted to millions of people.

On September 6, 2022, a Wall Street Journal headline read “[California Power Grid Faces Biggest Blackout Risk of Year as Heat Wave Intensifies](#).” The Journal’s editorial page, never a fan of California’s environmental leadership, was no doubt preparing to assign blame. Texas Senator Ted Cruz [memorably did just](#) that when he blasted the entire state after an earlier western heat wave in August of 2020 yielded modest outages for a few hours (“California is now unable to perform even basic functions of civilization”). Cruz ate those words after an epic Texas grid failure just six months later, which tragically resulted in [hundreds of deaths](#), and [left about two-thirds of the state’s residents literally freezing in the dark for an average of 46 hours](#).

How did California handle its latest climate emergency without Texas-sized blackouts, or indeed any significant interruptions of electricity service? Start with the state’s access to a giant regional power grid, which Texas conspicuously lacks. California’s transmission connections to the Pacific Northwest alone can carry ten times as much power (7,900 MW) as all of Texas’s very limited interconnections with its neighboring states (800 MW). Walt Pollock, a former Northwest utility leader, reports that California’s total capacity to import and export power is about 20,000 MW. Staff at the Portland-based Bonneville Power Administration (BPA) shared [data](#) showing that on September 6 the Northwest transmission lines to California were largely full, with 5,500 MW to 7,500 MW surging south during the period of greatest need. But interregional cooperation extended much further, and power sharing went both to and from California.

The western grid covers an area seven times the size of Texas, including two Canadian provinces, which creates invaluable geographic diversity that helps average out temperature extremes and fluctuations in the availability of resources like hydropower, wind and solar. The Pacific Northwest, for example, was cooler than the rest of the West during the latest regional heat wave, and its huge hydropower system has been spared widespread drought in recent months. The Desert Southwest did not exceed normal heat levels and Arizona utilities in particular were able to come to California’s aid (California had supported Arizona during extreme monsoon conditions just weeks earlier). When it comes to electric system reliability, by comparison with the western grid, Texas is just not big enough.

In addition, decades of energy efficiency progress in buildings and equipment have cut tens of thousands of megawatts from power needs in [California and the Pacific Northwest](#), greatly enhancing

the capacity of both regions to overcome their own weather extremes and help their neighbors. When California's peak power consumption surpassed 50,000 MW on an historically hot September 6, it was still 25,000 MW below levels [recorded on a recent hot summer day in Texas](#), a state with a much smaller population and economy. This highlights the crucial importance of the demand side of the electric reliability equation.

Also important to California were effectively communicated appeals for load reductions as blackouts loomed. State outreach to public and private sector partners resulted in a major collective effort, evidenced in a surge in enrollments for the Emergency Load Reduction Program and the brand new Demand Side Grid Support program. At the same time, the state's Strategic Reserve provided up to 1,500 MW in emergency support and the Department of Water Resources conducted intense daily temperature modeling in order to increase generation from the Oroville Complex when it was most needed, resulting in an increase of generation from a typical 150 MW up to 550 MW. In total, DWR provided over 910 MW of generation to the grid from the State Water Project at times of greatest need. On September 6th, the only day when the California grid reached a Stage 3 emergency, urgent simultaneously texted appeals to millions of residents yielded consumption reductions of 2,400 MW within minutes, ending the threat of service interruptions on that day.

And let's not neglect renewable energy and storage technologies. California's Public Utilities Commission (CPUC) launched an historic clean energy procurement process over the 2019-2021 period, with aggregate targets approaching 15,000 MW. More than 3,500 MW of battery storage were available to the state's grid operator on September 6. These renewable energy sources and storage technologies not only performed as expected, but also proved that they can significantly enhance grid reliability while helping the state do its part toward reducing the global carbon emissions that contribute so much to climate disruption. California is pressing not only to accelerate deployment of existing clean energy technologies, but also to expand into long duration storage, offshore wind and other opportunities.

None of this invites complacency. California's regulators and grid operators would be the first to acknowledge [that their electricity planning needs to account better for disruptive climate change](#). They need to move quickly to follow up on legislation (SB 846) that added \$1 billion to buttress energy

efficiency, demand response, and other elements of California's clean energy portfolio. Another work in progress is pushing electric vehicle (EV) charging to off-peak hours when there is plenty of [spare capacity on the system](#). EVs now [account for only about half a percent of California's net peak demand for electricity, but they can substantially improve overall grid reliability](#) with the right incentives.

NRDC and many others also share the conviction that we can do much more to enhance the regional grid integration that helped keep the lights on this past week, and for many decades preceding it. A focus of potential progress now is the eight-year-old [Energy Imbalance Market](#) (EIM), whose efficiencies and innovations have improved reliability and saved westerners [more than two billion dollars](#); much more progress beckons if participants can agree on governance reforms and [an upgraded wholesale power market](#). The EIM was a primary means for efficiently redistributing power in real time during the recent heat emergency, when it came of age as a climate resiliency tool. At full maturity it will be able to do even more to reduce costs and improve reliability for the entire Western region.

[This assessment benefitted substantially from exchanges with Karen Douglas, Governor Gavin Newsom's Energy Advisor.]

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